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This listing of claims will replace all prior versions,
and listings, of claims in the application:

1   Claim 1 (currently amended): A method of processing a
2   frequency division multiplexed signal representing a
3   plurality of symbols and including a plurality of tones,
4   a first subset of said plurality of tones being allocated
5   to a first user, the method comprising the steps of:
6   performing a time domain to frequency domain
7   transform operation on the frequency division multiplexed
8   signal to generate a frequency domain signal there from;
9   filtering the frequency domain signal to remove
10 tones in said plurality of tones which are not included
11 in said first subset of tones;
12   performing a frequency domain to time domain
13 transform operation on the filtered frequency domain
14 signal to generate a filtered time domain signal;
15   performing, after performing said frequency
16 domain to time domain transform operation a channel
17 equalization operation on the filtered time domain
18 signal; and
19   recovering symbols transmitted to the first
20 user from the filtered time domain signal following
21 equalization.

1   Claim 2 (currently amended): The method of claim 1,
2   wherein said frequency division multiplexed signal is an
3   OFDM signal recovering symbols includes:

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4   ~~performing a channel equalization operation on~~
5   ~~the filtered time domain signal~~.

1   Claim 3 (currently amended):   The method of claim ~~2~~ <u>1</u>,
2   wherein recovering symbols further includes performing a
3   channel estimation operation, said channel estimation
4   operation including:
5   identifying a training symbol in the filtered
6   time domain signal; and
7   generating at least one channel estimation as a
8   function of the difference between the identified
9   training symbol and a known training symbol value.

1   Claim 4 (currently amended):   The method of claim ~~2~~ <u>1</u>,
2   wherein the frequency division multiplexed
3   signal corresponds to multiple symbol periods, the
4   portion of the received signal corresponding to each
5   symbol period including at least one training symbol; and
6   wherein recovering symbols further includes
7   performing a channel estimation operation, said channel
8   estimation operation including, for each symbol period:
9   identifying a training symbol in the
10   filtered time domain signal; and
11   generating at least one channel
12   estimation as a function of the difference
13   between the identified training symbol and a
14   known training symbol value.

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1   Claim 5 (currently amended):   The method of claim 2̶ 1̲,
2   wherein the frequency division multiplexed signal
3   corresponds to multiple dwells, each dwell being a period
4   of time equal to multiple symbol periods, the first user
5   being allocated the first subset of said plurality of
6   tones for use throughout one of said dwells, the method
7   further comprising:
8   performing a channel estimation operation
9   including, for each dwell:
10   identifying a training symbol in the
11   filtered time domain signal received during one
12   symbol period within the dwell; and
13   generating a channel estimation as a
14   function of the difference between the
15   identified training symbol and a known training
16   symbol value.

1   Claim 6 (original): The method of claim 5,
2   wherein performing a channel equalization
3   operation includes:
4   using a channel estimation generated
5   from a training symbol received during a dwell
6   to perform a channel equalization operation on
7   a portion of the filtered time domain signal
8   corresponding to a symbol period in said dwell
9   which does not include said identified training
10   symbol.

1   Claim 7 (original): The method of claim 5,

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2   wherein all of a plurality of symbols received
3   during one of said symbol periods in each dwell include
4   training symbols;
5   wherein performing a channel estimation
6   operation for each dwell further includes:
7   generating a channel estimation for
8   each of the training symbols received during
9   said one of said symbol periods.

1   Claim 8 (original): The method of claim 7, wherein
2   performing a channel equalization operation includes:
3   using the channel estimations generated from
4   each of the received training symbols during said one of
5   said symbol periods in each dwell, to perform separate
6   channel equalization operations on each portion of the
7   filtered time domain signal corresponding to a symbol in
8   at least one other symbol period included in the same
9   dwell in which the training symbols used to generate the
10   channel estimations were received.

1   Claim 9 (original): The method of claim 8, the symbol
2   period in which all received symbols are training symbols
3   is located at the center of each dwell.

1   Claim 10 (currently amended): The method of claim 2̶ 1,
2   wherein the frequency division multiplexed
3   signal is an orthogonal frequency division multiplexed
4   signal; and

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5   wherein recovering symbols transmitted to the
6 first user includes:
7   mapping values of the filtered time
8   domain signal at instants in time used to
9   transmit symbol values to values in a set of
10   symbol values.

1 Claim 11 (original): The method of claim 10, wherein
2 recovering symbols transmitted to the first user further
3 includes:
4   performing a symbol value to symbol value
5 mapping operation to map symbol values generated by
6 mapping values of the filtered time domain signal to
7 values in another set of symbol values.

1 Claim 12 (original): The method of claim 10,
2   wherein performing a time domain to frequency
3 domain transform operation includes performing one of a
4 Fast Fourier Transform operation and a Discrete Fourier
5 Transform operation; and
6   wherein performing a frequency domain to time
7 domain transform operation includes performing one of an
8 Inverse Fast Fourier Transform operation and an Inverse
9 Discrete Cosine Transform operation.

1 Claim 13 (original): The method of claim 12, further
2 comprising:
3   receiving the frequency division multiplexed
4 signal from a communications channel including frequency

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5   division multiplexed signals corresponding to users other
6   than the first user.

1   Claim 14 (currently amended): An apparatus for
2   processing a frequency division multiplexed signal
3   representing a plurality of symbols and including a
4   plurality tones, a first subset of said plurality of
5   tones being allocated to a first user, the apparatus
6   comprising:
7   a time to frequency domain transform module for
8   generating a frequency domain signal from the frequency
9   division multiplexed signal;
10   a tone filter for filtering from the frequency
11   domain signal generated by the time domain to frequency
12   domain transform module tones other than those included
13   in the first subset to thereby generate a filtered
14   frequency domain signal;
15   a frequency to time domain transform module for
16   performing a frequency domain to time domain transform
17   operation on the filtered frequency domain signal to
18   thereby generate a time domain signal;
19   a channel equalizer located after said
20   frequency domain to time domain transform module, for
21   performing a channel equalization operation on the time
22   domain signal produced by the frequency to time domain
23   transform module; and
24   a time instant to symbol mapping module coupled

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25   to the ~~frequency-to-time-domain-transform-module~~ channel

26   equalizer for mapping signal values at points in time to

27   symbol values.

1   Claim 15 (currently amended): The apparatus of claim 14,

2   wherein the frequency division multiplexed signal is an

3   OFDM signal ~~further-comprising:~~

4   ~~————————— a channel equalization module coupling said~~

5   ~~frequency-to-time-domain transform module to the time~~

6   ~~instant to symbol mapping module, the channel~~

7   ~~equalization module performing channel equalization~~

8   ~~operations on said time domain signal~~.

1   Claim 16 (currently amended): The apparatus of claim ~~15~~

2   14, further comprising:

3   a channel estimation circuit coupled to said

4   frequency to time domain transform module and to the

5   channel equalization module for generating at least one

6   channel estimate from the time domain signal and for

7   supplying the channel estimate to the channel

8   equalization module.

1   Claim 17 (original): The apparatus of claim 16, further

2   comprising;

3   a symbol to symbol mapping module coupled to

4   the time instant to symbol mapping module.

1   Claim 18 (original): The apparatus of claim 16, further

2   comprising:

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3   a cyclic prefix discarding circuit coupled to
4   the time to frequency domain transform module for
5   discarding portions of the frequency division multiplexed
6   signal corresponding to cyclic prefixes.

1   Claim 19 (original): The apparatus of claim 14,
2   wherein the frequency division multiplexed
3   signal is an orthogonal frequency division multiplexed
4   signal;
5   wherein the time to frequency domain transform
6   module is a Fast Fourier Transform circuit; and
7   wherein the frequency to time domain transform
8   module is an inverse Fast Fourier Transform circuit.

1   Claim 20 (currently amended): A method of processing a
2   received orthogonal frequency division multiplexed signal
3   to generate symbol values, the method comprising: ~____
4   .   performing a frequency domain to time domain
5   transform operation to generate an OFDM time domain
6   signal;
7   performing, after performing said frequency
8   domain to time domain transform operation, a channel
9   equalization operation on the received OFDM time domain
10   signal in the time domain;
11   and
12   mapping values of the OFDM time domain signal
13   after channel equalization at instants in time used to
14   transmit symbol values to symbol values.

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1   Claim 21 (currently amended):   The method of claim 20,

2   further comprising:

3   filtering the OFDM signal in the frequency

4   domain to remove undesired signal tones prior to

5   performing said channel equalization operation on the

6   received OFDM time domain signal in the time domain.

1   Claim 22 (currently amended): An orthogonal frequency

2   division multiplexed (OFDM) signal receiver for receiving

3   an OFDM signal, the receiver comprising:

4   a frequency domain to time domain transform

5   module for performing a frequency domain to time domain

6   transform operation to generate an OFDM time domain

7   signal;

8   a time domain channel equalization module,

9   located after said frequency domain to time domain

10 transform module, for performing a channel equalization

11 operation on the OFDM ~~signal in the~~ time domain signal

12 generated by said frequency to time domain transform

13 operation; and

14   a time instant to symbol mapping module for

15 mapping values of the ~~OFDM~~ time domain signal after

16 channel equalization at instants in time used to transmit

17 symbol values to symbol values.

1   Claim 23 (currently amended): The receiver of claim 22,

2   further comprising:

3   a time to frequency domain signal transform

4   circuit for converting the received OFDM signal to the

5   frequency domain; and

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6   a tone filter coupled to the time to frequency
7   domain signal transform circuit for performing a
8   filtering operation on the received OFDM signal in the
9   frequency domain, and
10   ~~a frequency domain to time domain transform~~
11   ~~circuit coupling the tone filter to the time domain~~
12   ~~channel equalization module for converting the filtered~~
13   ~~signal back into the time domain~~.

1   Claim 24 (currently amended): A communications system
2   comprising:
3   an orthogonal frequency division multiplexed
4   signal transmitter including:
5   a symbol to time instant mapping module
6   for mapping a plurality of symbols to be
7   transmitted to uniformly spaced points in time
8   within a time period corresponding to a symbol
9   duration; and
10   an orthogonal frequency division multiplexed
11   signal receiver including:
12   a frequency domain to time domain
13   transform module for performing a frequency
14   domain to time domain transform operation on a
15   received OFDM signal to thereby generate a time
16   domain signal;
17   a time domain channel equalization module,
18   located after said frequency domain to time
19   domain transform module, for performing a
20   channel equalization operation on the time
21   domain signal;

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22   a time instant to symbol mapping module
23   for mapping signal values at points in time
24   used to transmit symbols to symbol values.

1   Claim 25 (currently amended): The system of claim 24,
2   wherein the receiver further includes:
3   a time domain to frequency domain transform
4   circuit for converting a received signal from the time
5   domain to the frequency domain; and
6   a tone filter coupled to the time domain to
7   frequency domain transform circuit for filtering tones,
8   outside a set of tones used by the receiver, from the
9   received signal in the frequency domain, an output of the
10 tone filter supplying the input to the frequency domain
11 to time domain transform circuit, and
12   a frequency domain to time domain transform
13 circuit for coupling the tone filter to the time instant
14 to symbol mapping module.

1   Claim 26 (currently amended): The system of claim 24,
2   wherein the received OFDM signal includes a plurality of
3   uniformly spaced OFDM tones receiver further includes a
4   time domain channel equalization circuit coupled between
5   the frequency domain to time domain transform circuit and
6   the time instant to symbol mapping circuit.

1   Claim 27 (previously presented): The method of claim 1,
2   wherein said step of recovering symbols transmitted to
3   the first user from the filtered time domain signal is

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4   performed by performing a time domain signal to symbol

5   value mapping operation in the time domain.

1   Claim 28 (previously presented): The method of claim 27,

2   wherein performing the time domain signal to symbol value

3   mapping operation in the time domain includes generating

4   multiple symbol values for a portion of the filtered time

5   domain signal corresponding to a symbol transmission time

6   period, each symbol value being generated from a

7   different part of the filtered time domain signal.

1   Claim 29 (previously presented): The method of claim 28,

2   wherein the value of the filtered time domain signal at a

3   single instant in time is used to generate one symbol

4   value.

1   Claim 30 (currently amended): The method of claim 1,

2   wherein recovering ~~multiple symbol values~~ symbols from

3   the filtered time domain signal includes recovering a

4   plurality of symbol values from a portion of said

5   filtered time domain signal corresponding to a single

6   OFDM symbol transmission time period, each symbol value

7   corresponding to a different point in time within the

8   single OFDM symbol transmission time period.

1   Claim 31 (previously presented): The method of claim 30,

2   where the different points in time within the symbol

3   transmission time period from which individual symbol

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4 values are generated are uniformly spaced in time within
5 the single OFDM symbol transmission time period

1 Claim 32 (previously presented): The apparatus of claim
2 14, wherein said time instant to symbol mapping module is
3 a time domain signal processing module which maps each
4 one of multiple individual time instants within an OFDM
5 symbol time period to corresponding individual symbol
6 values according to a one to one relationship between
7 time instants and symbol values.

1 Claim 33 (currently amended): The method of claim 20,
2 wherein said mapping of values of the OFDM time domain
3 signal after channel equalization involves performing
4 said mapping of values in the time domain, said mapping
5 including mapping of a plurality of individual instants
6 in time within an OFDM symbol period to generate a
7 corresponding plurality of symbol values, each of the
8 plurality of symbol values corresponding to a single time
9 instant.

1 Claim 34 (previously presented): The receiver of claim
2 22, wherein said time instant to symbol mapping module
3 performs said mapping in the time domain, said mapping
4 including mapping of a plurality of individual instants
5 in time within an OFDM symbol period to generate a
6 corresponding plurality of symbol values, each of the
7 plurality of symbol values corresponding to a different
8 point in time.

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1   Claim 35 (previously presented): The system of claim 24,
2   wherein said time instant to symbol mapping module maps
3   different points in time within a single OFDM symbol
4   transmission time period to determine individual symbol
5   values corresponding to individual ones of said different
6   points in time.

1   Claim 36 (previously presented): The method of claim 1,
2   wherein said plurality of tones includes another subset
3   of tones allocated to a another user, said another user
4   being different from said first user, said filtering of
5   the frequency domain signal removing tones in said
6   another subset of tones.

1   Claim 37 (previously presented): The method of claim 36,
2   wherein said frequency division multiplexed signal is an
3   OFDM signal, said first set of tones and said second set
4   of tones corresponding to said OFDM signal.